1. SCOPE OF WORK

As part of the Yucca Mountain Repository development efforts, the Department of Energy (DOE) has a requirement to furnish and install a two mile six-foot security fence (approximately 10560 feet), along the Nevada Test Site (NTS)/Bureau of Land Management (BLM) border to include a double swing manually operated gate.

Location/Direction from Las Vegas: North on Nevada Highway 95 to Lathrop Wells and turn north at first developed road west of highway intersection 95/373. Location is approximately 1 ½ miles north of the turn.

2. GENERAL

This Statement of Work includes all engineering, equipment, design, procurement, fabrication, erection, construction, construction testing, and commissioning of all systems and equipment installed and constructed for the fencing and gate at the Gate 510 facility. All work shall be performed within the designated work area and boundaries of the YMP project as marked by surveyor's stakes. All contractors shall be U.S. Citizens and proof of citizenship will be verified prior to start work.

Contractor shall provide all technical and professional personnel (including surveyors, architects, and engineers, licensed in the State of Nevada, final detailed design and construction documents (drawings and specifications). The completed fencing, site development and components shall conform to requirements as stated in the Statement of Work.

Contractor shall furnish and construct the complete fencing system in accordance with requirements identified in this statement of work and contractor's approved design documents (drawings and specifications), including but not limited to the following:

- Complete 6' Security fence for 1 mile in each direction of Gate 510 entrance in accordance with attached site conceptual plan.
- Complete manual gate structure and locking mechanism across existing site access road per attached site conceptual plan.

2.1 WORK INCLUDED

Contractor shall provide the engineering design, fabrication, all labor and materials for the delivery, installation, assembly and construction. This includes, but is not limited to the following tasks;

- Clear and grub the site area

- Excavation and placement of fence foundations
- Install area perimeter fence and NTS boundary fence and gate
- Construction and commissioning
- Attach Government signage (provided by DOE) as requested to the 2 miles of 6' security fence

2.2 WORK EXCLUDED

- Coordinating work with BSC and NTS
- Conceptual site layout and conceptual building design drawings
- Hauling of hazardous and non-hazardous waste from site to disposal area.
- Temporary relocation of Gate 510 existing security station
- Environmental Permits
- Photographs

2.3 GOVERNMENT SUPPLIED RESOURCES

The Contactor shall be required to work on-site at the Yucca Mountain Project site located near Lathrup Wells, NV. The Government shall provide sufficient work space to accomplish the work identified in this statement of work. The Government shall also provide construction power, associated security, and necessary interface with interested organizations (BSC, NTS, etc.). The Government shall also supply the staking necessary to indicate desired fence position. The Government shall also supply the signage that is required to attach to the fence.

2.4 PERSONNEL QUALIFICATIONS REQUIREMENTS AND QARD APPLICABILITY

Personnel Qualifications are as required by separate requirements associated with the design and construction of a fencing system associated with a facility as described within this Statement of Work. Quality Assurance: Work performed under this contract is not subject to the OCRWM Quality Assurance Requirements Document.

3. CONSTRUCTION

3.1 COORDINATION OF CONSTRUCTION ACTIVITIES

Contractor shall supply all construction and testing equipment, tools, air compressors, generators, consumables, and items of safety supplies including first aid facilities and monitoring equipment for the job-site erection work.

Contractor shall clean and maintain all allocated areas and return them to as-found condition upon completion of the Work.

Contractor shall provide for all third-party code inspections, as may be required by this contract.

3.2 SYSTEMS COMPLETION AND TURNOVER

Contractor shall have a logical and documented process for identifying any pending or outstanding work and for the turnover of the work, either incrementally or in total to DOE. Contractor shall have a process/system for tracking and completing outstanding or incomplete work items (punch list items) identified during final inspections of systems or facilities by the DOE to document acceptance of completed systems or facilities.

3.4 SURVEYING

Contractor shall establish a method of controlling survey requests from DOE.

Contractor shall maintain all equipment in good working order, within calibration and shall field check for accuracy on regular basis.

Contractor shall retain all field survey observations, computations and recordings in field books or electronic files including a daily log of survey activities.

Contractor shall establish a minimum of two survey monuments that are intended to remain stable for the duration of the construction duration.

The acceptable error of closure for the survey monument traverse shall be not less that 1/30,000 unless specified otherwise.

The Contractor shall use the survey information supplied by the DOE.

3.5 UTILITY AVOIDANCE

Contractor shall have a documented process for utility avoidance. The Contractor documented process shall include the following specific elements:

- Prior to the start of excavation the Contractor shall ensure that the route and utility locations are verified and documented, and authorization to proceed with excavation has been secured.

3.6 FENCING

(1) Wire mesh fencing materials used to enhance penetration resistance must be 2 square inches or smaller mesh of No. 11 American Wire Gauge or heavier steel wire or expanded metal.

(2) Overall fence height, excluding barbed wire or barbed tape coil topping, must be a minimum of 6 feet.

(3) Fence lines must be kept clear of vegetation, trash, equipment, and other objects that could impede observation or facilitate bridging.

(4) Gate hardware for security fencing must be installed in a manner to mitigate tampering and/or removal (e.g., by brazing, peening, or welding).

(5) A clear zone must be provided along each side of security fences to facilitate intrusion detection and assessment.

(6) Posts, bracing, and other structural members must be located on the inside of security fences. Where the galvanized finish has been removed or damaged during installation, the posts, bracing, and other structural members must be coated with zinc-enriched paint.

(7) Wire ties used to fasten fence fabric to poles must be of equal tensile strength to that of the fence fabric.

(8) Areas under security fencing subject to water flow, such as bridges, culverts, ditches, and swales, must be blocked with wire or steel bars that provide for the passage of floodwater but also provide a penetration delay equal to that of the security fence.

(9) Depressions where water flow is not a problem must be covered by additional fencing suspended from the lower rail of the main fencing.

(10) Fencing must extend to within 2 inches (5 centimeters) of firm ground or below the surface if the soil is unstable or subject to erosion. Surfaces must be stabilized in areas where loose sand, shifting soils, or surface waters may cause erosion, thereby assisting an intruder in penetrating the area. Where surface

stabilization is impossible or impractical, concrete curbs, sills, or similar type of anchoring device extending below ground level must be provided.

(11) Alternative barriers may be used instead of fencing if the penetration resistance of the barrier is equal to or greater than security fencing specified in this Chapter.

3.7 CONCRETE OPERATIONS

Contractor shall obtain DOE acceptance of all Contractor developed concrete mix designs prior to placing of concrete.

Contractor shall maintain all batch plant tickets, inspection and testing records traceable to the concrete placements.

3.8 FIELD PAINTING AND COATINGS

Contractor shall install coatings in accordance with paint manufacturer's recommendations.

Contractor shall ensure that surface preparation on items to be coated is in accordance with manufacturer's requirements.

3.9 INSTALLATION OF ROTATING EQUIPMENT

Contractor is responsible for dimensionally checking foundations, embedment and all features interfacing with the equipment being erected/installed.

Contractor shall perform an alignment check of equipment prior to grouting to verify that coupling spacing and final alignment can be achieved.

Contractor shall conduct any field testing of equipment.

4. DESIGN

1. An initial design meeting will be held prior to construction, to review and approve the following;

- Complete set of construction documents including 3 copies of all vendor manuals.
- Reproducible drawings: Final plotted design drawings with professional Contractor firm identified.
- Final Drawings: Full size copies of final design drawings with professional architect and engineer's seal(s) affixed.

- Original Specifications: print ready specifications, unbound.
- Final Specifications: bound specifications with engineer's seal(s) affixed.
- Construction Schedule

2. Closeout Submittals

Any changes and as-built drawings associated with the completion of the fencing project and final inspection / acceptance report.

4.1 CIVIL DRAWINGS, SPECIFICATIONS AND CALCULATIONS

Civil drawings shall include at least the following:

A. Site Plan that shows:

1. Basis of bearing information and site boundary
2. Site features, such as existing roads, streets and street names
3. North arrow and scale
4. New buildings
5. Parking areas
6. Ingress and egress points
7. Site dimensions
8. Fencing and gates

Civil drawings shall adhere to the graphical standards of the industry as described by architectural drawing standard system or approved equal.

Civil specifications shall describe all site improvement materials and products including requirements for:

A. Site preparation, clearing and grubbing

B. Earthwork

C. Aggregate base, paving, concrete, trenching and backfill

D. Water piping, sanitary sewer piping, storm drainage system piping manholes and valves

E. Site concrete

F. Signage

G. Fencing and gate

H. Other specifications as appropriate.

4.2 CONCRETE

Concrete shall have Portland cement from an approved American (USA) brand conforming to ASTM C150, Type II.

Concrete shall not have admixtures containing chlorides.

Fine and coarse aggregates for normal weight concrete shall conform to the requirements of ASTM C33.

Concrete mixes shall use only clean water, free from oil, acid, alkalis, organic matter, or other deleterious substances and shall conform to the requirements of ASTM C94. Drinking water is generally acceptable.

Concrete mixes shall specify water-cement ratios, curing methods, and finishing requirements to reduce cracking in the placed concrete.

All concrete shall have a water-reducing admixture.

All concrete exposed to the effects of weather or freezing and thawing shall have an air-entraining admixture, resulting in 5% to 7% entrainment.

5. DOCUMENT STANDARDS

5.1 GENERAL

Maximum drawing size shall not exceed 32" × 44" (E size).

This statement of work shall not specify proprietary vendors, systems, materials or components except in those cases where the product matches others already in use at a particular site or facility. In cases involving a unique or novel product, the use of which serves the best interest of the project, the statement of work may list only one product or manufacturer. The Contractor shall obtain written approval from DOE for the use of such proprietary products prior to specifying.

5.2 REQUESTS FOR INFORMATION

Contractor shall be responsible for submitting a Request for Information (RFI) including appropriate supporting documentation to DOE if the Contractor is unable to understand the technical documents, discovers or perceives a conflict, ambiguity, error or omission in or among the technical documents or has an alternate/substitute material or method to propose that improves cost or schedule.

5.3 AS BUILT DRAWINGS

Contractor shall provide a complete set of As Built drawings depicting the final installed configuration of the fencing.

APPENDIX A

REFERENCES

ASTM C 150-04a. 2004. *Standard Specification for Portland Cement.* West Conshohocken, Pennsylvania: American Society for Testing and Materials.

ASTM C 33-03. 2003. *Standard Specification for Concrete Aggregates.* West Conshohocken, Pennsylvania: American Society for Testing and Materials.

ASTM C 94/C 94M-04a. 2004. *Standard Specification for Ready-Mixed Concrete.* West Conshohocken, Pennsylvania: American Society for Testing and Materials.

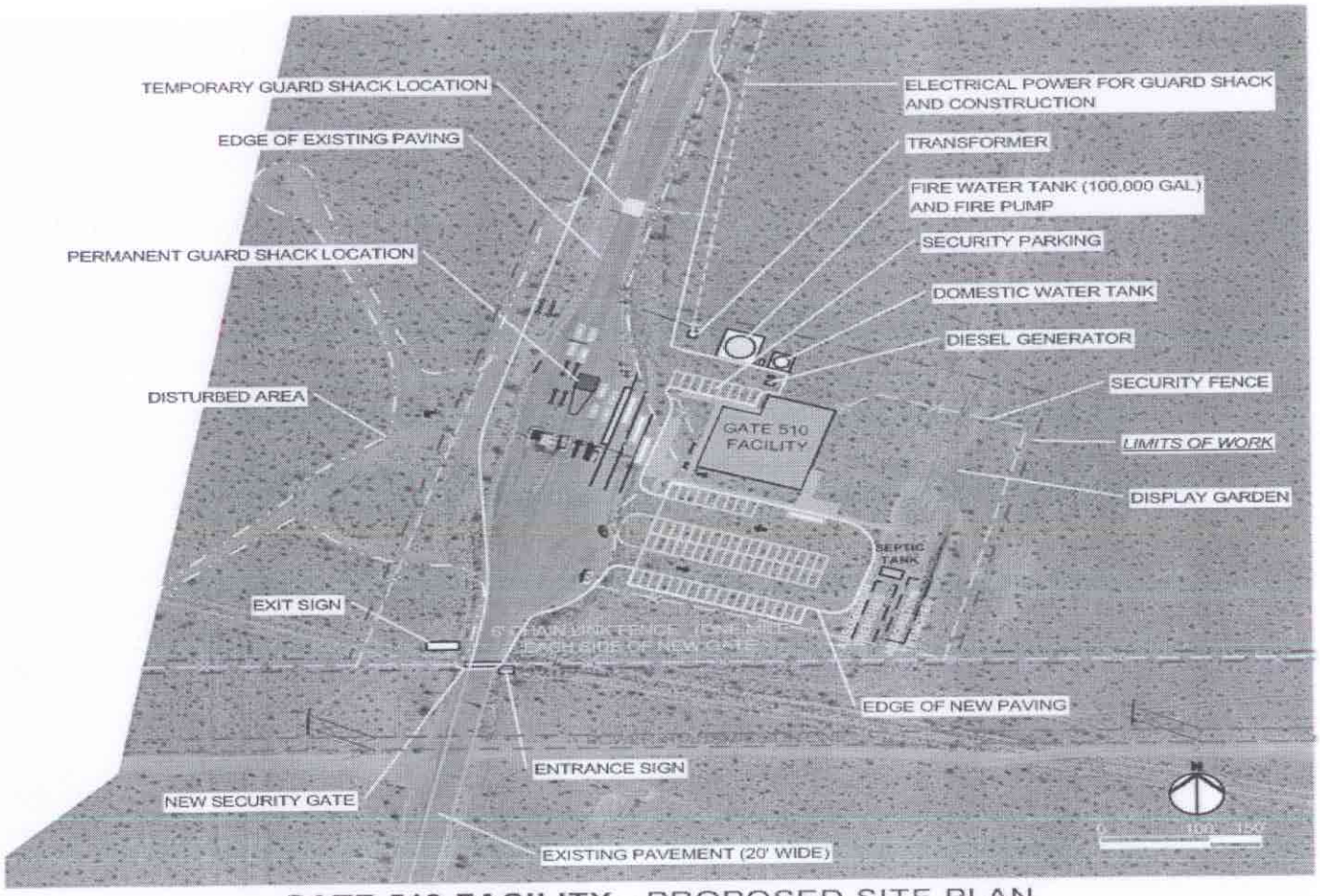

Figure A-1. Site Conceptual Plan